

94. DOMINICAN GREBE. (*Podiceps dominicus.*)

I saw several small Grebes on the crater lagoon in Tigre Island, and shot two of them. The larger measured $8\frac{1}{4}$ inches in length. Irides yellow; legs and feet dark lead-colour; upper surface of body nearly black; chin white; breast reddish; primaries white, edged with dark. The other one, killed by the same shot, was smaller, and probably a female.

APPENDIX.

The following birds were omitted in their proper places:—

1. AMERICAN MEADOW LARK. (*Sturnella ludoviciana.*)

The only place where I noticed this bird was in the open grassy plain near Siquatepique, where they were abundant. When running among the grass they appear like Quails (*Coturnix dactylisonans*), especially when they stop and raise their heads—a common practice when approached within a short distance. In the United States I have found these birds difficult of approach, but here they were tame enough.

2. HOODED WREN-CREEPER. (*Campylorhynchus capistratus.*)

I saw a small colony of these birds preparing their nests in some low bushy trees with large trunks growing by the side of a stream on the Pacific Slope. I did not observe them elsewhere.

The Parrot mentioned (p. 121) as much resembling *Chrysotis auripalliata*, is *Chrysotis xanthops*.

The large Hawk spoken of as “possibly *Buteo æquinoctialis*” (p. 226) was probably a *Urubitinga*.

XXXIX.—*Remarks on the Internal Structure of the Bearded Titmouse* (*Calamophilus biarmicus*). By ROBERT F. TOMES, C.M.Z.S.

THE little bird which forms the subject of the present communication is one of those, the precise affinities of which are somewhat obscure. It appears by common consent to have been classed with the Tits (*Parus*), amongst which, or rather perhaps appended to them, we find it in most works on ornithology. The names of Temminck, Bonaparte, Yarrell, Schlegel, G. R.

Gray, Degland, and of Keyserling and Blasius, will be quite sufficient for me to adduce in support of this statement, whilst the name of Professor Macgillivray, so far as I know, stands alone in justification of its asserted Fringilline affinities.

Having received, through the kindness of Mr. Selater*, some specimens preserved in spirit, I set about making a dissection, the object of which was to ascertain if any osteological peculiarities were present which might confirm or refute the views of Professor Macgillivray. The results of this examination I now propose to give. Before doing this, however, it appears desirable to mention what has been stated by the late Professor, and I cannot do better than quote his own words, being confident of their great accuracy :—

“Tongue slender, trigonal, obliquely truncated and lacerate ; œsophagus enlarged into a kind of half-cross, inclined toward the right side ; stomach muscular, with a dense rugous epithelium.

“The examination of the digestive organs of the only known species of this genus at once determines its natural affinities, showing that, having the kind of dilatation of the œsophagus peculiar to the Huskers, it must be referred to that group, although it has hitherto been considered as closely connected with the Tits.

“In some respects it is distantly allied to *Emberiza schœniclus* ; but its more direct affinities are, I think, to the species of the American genus *Ammodramus*, whose mode of life is very similar. Its affinity to the Tits is very remote ; and, although I have been censured for pointing out errors, I cannot allow such an association to remain undisturbed. The bird in question has not the abrupt bristle-tipped tongue of a Tit, and its œsophagus is dilated toward the right side, as in all the birds which I have referred to the order of Huskers.

“During the autumn and winter they live chiefly on the seeds of the reeds, which they pick from the husks ; but they also, as is related by Mr. Dykes, feed upon *Succinea amphibia* and *Pupa muscorum*, he having found ‘the crop of one, which was not larger than a hazel-nut, containing twenty of the former, and

* For these specimens our best thanks are due to Mr. Henry Stevenson of Norwich.—ED.

some of them of a good size,' together with four of the latter. Now none of the *Parinæ*, nor indeed any bird of the whole order of *Cantatores*, has a crop, which on the other hand occurs in a greater or less degree of development in all the *Deglubitores*."

While coinciding perfectly with Professor Macgillivray in all that is here quoted, I cannot but regret that he has in this, as in so many other instances, neglected to support his conclusions by osteological evidence, a deficiency I now venture to supply. The genus *Ammodramus* I do not know.

On viewing the bill in profile, its upper outline is seen to form one uniform curve from base to tip; and the lower margins of the same mandible have a somewhat similar curve, but less in degree, the regularity of which is interfered with by a slight prominence near the middle. The greatest depth of this mandible is at the nostrils, and its lower margins are *bent inwards* as in *Emberiza*. Seen from above, it is much the broadest at the base, and its sides present two nearly straight lines. The lower mandible is rather peculiar: its upper margins are *bent inwards* to match the inferior ones of the upper mandible, and they maintain a moderately uniform curve, the regularity of which is only interfered with by a slight prominence about the middle; in this respect it may also be said to resemble the upper mandible. It is altogether much weaker relatively than the superior one; and the line which constitutes the *symphysis menti* is quite straight and *very short*, not being more than equal in length to two-thirds of the distance from the nostrils to the point of the bill*. To this form of lower mandible I find no approach amongst those slender-billed Finches, of which the Goldfinch and Lesser Redpole are examples; and still less is it visible in the Tits, in which the lower maxillæ are united for the whole length of what is ordinarily termed the bill. But in the genus *Emberiza* some little approximation to this form is observable. The Reed Bunting appears, of the British species, to approach it most nearly. "In some respects," Professor Macgillivray says, speaking of the *Calamophilus*, "it is distantly allied to *Emberiza schæ-*

* The figure given by Professor Macgillivray of the head indicates, by the forward extension of the feathers of the chin, the shortness of the *symphysis menti*.

niclus," and the alliance is chiefly seen in the form of the bill of the two birds. When these parts are seen in profile, the resemblance is certainly traceable; the principal differences being in the greater curvature of the superior ridge in the *Calamophilus*, and in the much weaker lower maxilla. In other species of Bunting, in which the bill is stouter, the resemblance becomes less perceptible, but is not quite lost in any which I have examined.

I will now give a short comparative description of the bills of some of the *Paridæ*, selecting European species as illustrations. The mandibles of *Parus major* are of nearly equal size, the lower one having a degree of curvature equal to that of the upper, and but little inferior to it in length. As in the Finches, the greatest breadth is at the nostrils; but it tapers much less rapidly, and maintains, so to speak, a kind of cylindrical appearance until it curves evenly on all sides to the point. A section of the bill at its base would represent an ovoid figure, the greater diameter being vertical; and the regularity of this figure would be in no way interfered with by the space between the rami of the lower maxilla, as this does not exist further forward than to a vertical line through the nostril. The bill of the Nuthatch (*Sitta*), if shortened, would be no unfair representation of the bill of a typical *Parus*,—a bill, in fact, adapted to the habit of perforating wood, common to both of these birds. Other species of *Parus* have bills which are but modifications of the form I have here described; thus, that of the Crested Tit is longer and more slender, approaching more those of the *Sylviadæ*, &c., whilst that of *Parus cæruleus* is very short and conical. The *Parus pendulinus*, however, exhibits a considerable deviation from the other European *Paridæ* in the shape of its bill: it is very acute, tapering evenly and sharply to the point; in short, it is a very acutely pointed cone, a section at the base of which would have the same figure as that of the true *Parus*.

To none of these modifications does the bill of the *Calamophilus* bear the least resemblance; it would be as correct to say that it resembled the bill of a Partridge or a Quail, as that of a Tit; indeed I could undertake to show greater resemblance to the bill of either of the former birds than to that of the latter. If in the form of the bill there is nothing to indicate a *Parine* affinity,

Professor Macgillivray has clearly shown that the alimentary system has a structure of quite an opposite nature to that of these birds.

I shall now endeavour to show that the sternum indicates a greater affinity with the *Fringillidæ* than with the *Paridæ*; but I must premise that this part, although of great importance in assisting in the determination of *families*, is much less serviceable in distinguishing between genera, and this renders it difficult, if not impossible, to say, by this means, to what genus the *Calamophilus* is most nearly allied. In a family of birds, like the *Fringillidæ*, which is not characterized by any very strongly marked peculiarities common to them all*, it may readily be conceived that the modifications of the sternum, however constant in the different groups, will be extremely difficult to define without the help of figures. In the present instance I should utterly fail to convey any intelligible idea by means of a detailed description, which would become one of measurement of parts merely, and this, in small objects, is often unsatisfactory. It will be better therefore to choose the sternum of some common species with which to compare that of the *Calamophilus*, and broadly state how they resemble each other. The sternum of the Common Sparrow resembles that of the *Calamophilus*, 1st, in the relative length of the furculum and coracoids with that of the sternum itself; 2nd, in the general outline of the latter, and in the shape of the keel; 3rd, in the extent and shape of the notches of the hinder margin, and (especially) the shape of the process which is separated from the body of the bone on either side by the notches.

The following genera, which I have specially examined in these investigations, appear to me to hold relationship to each other in the following manner, their several *adaptations* being the chief difference between them:—

LOXIA. *Fringillidæ* with mandibles modified for the purpose of extracting the seeds of Coniferæ.

* Take a Hawfinch, Crossbill, Bullfinch, Goldfinch, Redpole, and Sparrow, and remove that which *adapts* each to its peculiar régime; and what remains will be found to be very similar in all, and possessed of no striking external characters.

COCCOTHAUSTES. *Fringillidæ* with mandibles of great thickness for the purpose of crushing seeds with hard shells.

PYRRHULA. *Fringillidæ* with mandibles adapted to the habit of biting off, and feeding upon, the young buds of trees.

PASSER. *Fringillidæ* with mandibles of medium strength, suited to a varied diet of seeds, vegetables, and coleoptera.

FRINGILLA. *Fringillidæ* with mandibles of medium strength, fitted for a régime of seeds, rather varied in their kind and size.

CANNABINA. *Fringillidæ* with mandibles produced to an acute point, for the purpose of extracting the seeds of composite plants.

XL.—Note on the Birds of Prey of New Guinea.

By PHILIP LUTLEY SCLATER.

(Plate X.)

IN my Catalogue of the Mammals and Birds of New Guinea, published in the 'Journal of the Proceedings of the Linnean Society' (Zool. vol. ii. p. 154), I was able to enumerate only four Diurnal and two Nocturnal *Accipitres* as known to occur in that country. Mr. Wallace's researches at Havre Dorey have since added two more to the list, so that we now know of the following eight species of Raptorial birds inhabiting New Guinea:—

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| 1. <i>Ichthyætus leucogaster</i> . | 5. <i>Astur novæ hollandiæ</i> . |
| 2. <i>Haliastur leucosternus</i> . | 6. <i>Accipiter poliocephalus</i> . |
| 3. <i>Henicopernis longicauda</i> . | 7. <i>Spiloglaux humeralis</i> . |
| 4. <i>Baza stenozona</i> . | 8. <i>Spiloglaux theomacha</i> . |

Of these eight birds, *Ichthyætus leucogaster*, *Haliastur leucosternus*, and *Astur novæ hollandiæ* are well known as Australian species, and have a somewhat extended geographical distribution; the remaining five, as far as has been hitherto recorded, have only been met with in New Guinea and the Aru Islands, which belong essentially to the same fauna,—a further testimony, if any additional witness were necessary, to the peculiarities of this zoology.

The *Accipiter poliocephalus*, of which Mr. G. H. Gurney's libe-